

$$\frac{x}{y} = \frac{\Delta t}{r^2} \rightarrow \frac{\Delta t + M}{r^2} = \frac{1 + \sqrt{5}}{r} \rightarrow \Delta t + M = r(1 + \sqrt{5}) \rightarrow \boxed{M = r(\sqrt{5} - 1)} \quad (1)$$

$$\frac{\frac{x}{y}}{\frac{x}{y}} = \frac{x_r y}{x y} = \frac{S_r}{S_1} = \frac{(\sqrt{5} + r)t}{rt} = \frac{r\sqrt{5} + r}{1} = \frac{r(\sqrt{5} + 1)}{1}$$

$$\frac{\sqrt{x^2 + y^2}}{x} = \frac{1 + \sqrt{5}}{r} \rightarrow \frac{x^2 + y^2}{x^2} = \frac{r + r\sqrt{5}}{r^2} \xrightarrow{\text{تفصیل}} \frac{y^2}{x^2} = \frac{r + r\sqrt{5}}{r^2} = \frac{1 + \sqrt{5}}{r} \rightarrow \frac{x^2}{y^2} = \frac{r}{1 + \sqrt{5}} = \frac{r(1 - \sqrt{5})}{-4} \quad (2)$$

$$(\sqrt{5}a^2 + 4a)^2 = (r - 3a)^2 \rightarrow 5a^2 + 4a = r + 9a^2 - 12a \rightarrow 4a^2 - 16a + r = 0 \rightarrow a^2 - 4a + \frac{r}{4} = 0 \rightarrow (a - 2)^2 = 4 - \frac{r}{4} \rightarrow \frac{r}{4} = 4 \rightarrow \boxed{r = 16}$$

تفاوتی نیست مثبت

$$\left. \begin{array}{l} x > 1 \\ x \geq -1 \\ x \neq 1 \end{array} \right\} x = (1, +\infty) - \{1\} \quad \frac{\sqrt{x+1}}{\sqrt{x-1}+r} + \frac{\sqrt{x+1}}{\sqrt{x-1}-r} = \frac{\sqrt{x+1}(\sqrt{x-1}-r) + \sqrt{x+1}(\sqrt{x-1}+r)}{x-1-r^2} = \frac{2\sqrt{x+1}\sqrt{x-1}}{x-1-r^2} \rightarrow \sqrt{x+1} = x-1 \quad (3)$$

$$\rightarrow x + 1 = x^2 - 2x + 1 \rightarrow x^2 - 3x = 0 \rightarrow x(x-3) = 0 \rightarrow x = 0 \text{ or } x = 3$$

تفاوتی نیست مثبت

$$x < 2, x \neq -2 \quad \frac{1}{\sqrt{2-x}+r} + \frac{1}{\sqrt{2-x}-r} = \frac{\sqrt{2-x}}{2-x-r^2} = \frac{\sqrt{2-x}(\sqrt{2-x})}{2-x-r^2} \rightarrow 1 = -x-2 \rightarrow \boxed{x = -1} \rightarrow \text{دارای صفر مثبت} \quad (4)$$

$$(1-x)^2 = (x-1)^2 \rightarrow \frac{(x-1)^2 + x^2}{x^2(x-1)^2} = \frac{16}{9} \quad \frac{x^2 - x = t}{t^2} = \frac{16}{9} \rightarrow 16t^2 - 18t - 9 = 0 \rightarrow (t-3)(4t+3) = 0 \rightarrow t = 3 \text{ or } t = -\frac{3}{4}$$

$$\rightarrow \left\{ \begin{array}{l} x^2 - x + \frac{16}{9} = 0 \xrightarrow{\Delta < 0} S_1 = \emptyset \\ x^2 - x - \frac{16}{9} = 0 \xrightarrow{\Delta > 0} S_2 = \{2\} \end{array} \right\} S_T = \{2\} \quad (5)$$

$$\frac{-x^2 + 5x^2 + 20x - 10}{-x^2 + 5x^2} \cdot \frac{x-4}{-x^2 + 20} \xrightarrow{\text{بازای } x=4 \text{ برابر صفر نشود}} \frac{(5x-10)(x-4)}{(5x-10)(5x-20)} = \frac{(x-2)(x-4)}{(5x-20)} \geq 0 \rightarrow D_1 = (-\infty, -4] \cup [4, \infty)$$

$$\Rightarrow D_T = \{4\} \xrightarrow{\text{تست کنیم}} 4 + 4 = 8 \rightarrow 4 = x \text{ جواب معادله برابر } x \rightarrow \text{یک جواب} \rightarrow D_2 = [4, \infty) \quad (6)$$

$$\left\{ \begin{array}{l} 17-x = 3(2x+1) \rightarrow 7x-14=0 \rightarrow x=2 \\ 17-x = 3(3) \rightarrow x=8 \\ 17-x = 3(-2x-1) \rightarrow 5x+4=0 \rightarrow x=-\frac{4}{5} \end{array} \right. \rightarrow \left. \begin{array}{l} x=2 \rightarrow y=5 \rightarrow A|_2 \\ x=8 \rightarrow y=9 \rightarrow B|_8 \\ x=-\frac{4}{5} \rightarrow y=7 \rightarrow B|_{-\frac{4}{5}} \end{array} \right\} d = \sqrt{5^2 + (-2)^2} = \sqrt{29} \quad (7)$$

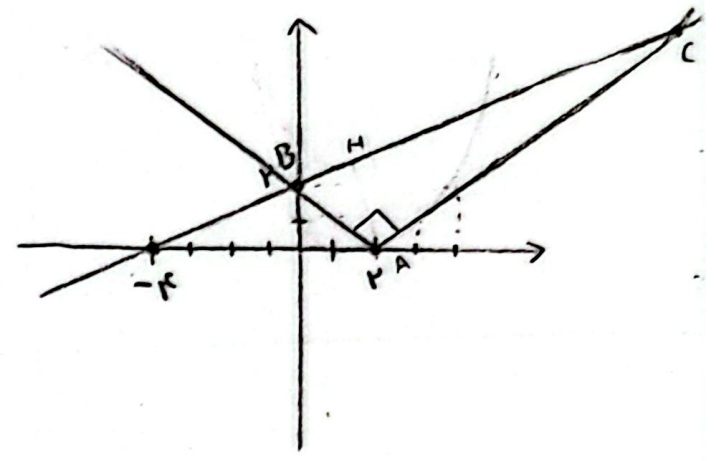
9

$$y = \frac{1}{2}x + 2 \leftrightarrow (0, 2) / y = \sqrt{(x^2 - 4x + 4)} = \sqrt{(x-2)^2} = |x-2|$$

$$\frac{1}{2}x + 2 = |x-2| \leftrightarrow \begin{cases} 2 = \frac{1}{2}x - 2 \rightarrow x = 8 \rightarrow y = 6 \\ x = 0 / y = 2 \end{cases}$$

A | 2 B | 0 C | 8

$$\overline{BA} = \sqrt{2^2 + 2^2} = 2\sqrt{2} / \overline{CA} = \sqrt{6^2 + 6^2} = 6\sqrt{2} \rightarrow S_{ABC} = \frac{2\sqrt{2} \times 6\sqrt{2}}{2} = 12$$



10

$$\frac{1}{x} + \frac{1}{x+9} = \frac{1}{2} \rightarrow 2 \cdot x + 18 + 2 \cdot x = x^2 + 9x \rightarrow x^2 - 4x - 18 = 0 \rightarrow (x-36)(x+5)$$

$\begin{matrix} 36 \\ 63 \\ 92 \\ 536 \end{matrix}$

$\begin{matrix} 36 \\ -5 \\ \hline 31 \end{matrix}$

$\rightarrow \boxed{\text{در 36 ساعت}}$

مرسی از بررسی